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CLAIMS

1. A TGC procedure for inducing targeted somatic transgenesis in an animal host, characterised in that bacteria with foreign DNA integrated into an episomal vector, under the control of eukaryotic regulatory elements for subsequent transcription and expression, release the said foreign gene in the host, in the case of infection of a whole organism, thus causing transcription and expression of foreign DNA and/ or foreign protein in said location.
2. The TGC method according to ~~claim~~ 1, characterised in that the bacteria release foreign genes in the case of infection of an organ through targeted perfusion or in culture, thus causing transcription and expression of foreign nucleic acid and/ or foreign protein in the organ.
3. The TGC method according to ~~claim~~ 1, characterised in that the bacteria release foreign genes in the case of infection of animal tissue, thus causing transcription and expression of foreign nucleic acid and/ or foreign protein in the tissue.
4. The TGC method according to claim 1, characterised in that the bacteria release foreign genes in the case of infection of a mixture of cells or a single cell line, thus causing transcription and expression of foreign nucleic acid and/ or foreign protein in the single cells of the mixture or in the cell line.
5. The TGC method according to ~~claims~~ 1 to 4, characterised in that the foreign DNA introduced into the host organism through bacterial infection causes the creation of a protein missing or foreign to the host organism in said location, or through creation of

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5 single or double strand nucleic acid raises, lowers or
prevents the creation of a protein or the effect of a
nucleic acid in the host organism.

6. A method according to claim 5, characterised in that
10 the foreign DNA introduced into the host organism
through bacterial infection is used

a) for somatic gene therapy or

15 b) for immunological protection against microbial
agents or

c) for immunological protection against tumour
diseases

20 and has prophylactic or therapeutic effect.

7. The method according to claims 1 to 6, characterised
in that bacteria are used of the types Aeromonads,
25 Bartonella, Brucella, Campylobacter, Clostridia,
Enterobacteriaceae, Legionella, Listeria,
Mycobacterium, Renibacterium, Rhodococcus or other
bacteria which are genetically or biochemically
related to the said types and which are
30 intracellularly viable in an eukaryotic host organism

8. The method according to claim 7, characterised in that
bacteria, through selection and genetic manipulation
of endogenous bacterial pathogenicity-associated
35 genes, preferable have their in vivo pathogenicity
weakened or strengthened in such a way that the
bacteria penetrate

a) into defined organs of the whole organism,

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b) into particular tissue of the host organism or

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- c) into particular compartments of cells
- and release foreign DNA in said locations.
- 10 9. The method according to claim 8, characterised in that the said manipulated bacteria are Listeria.
10. The method according to claim 9, characterised in that the said manipulated bacteria are Listeria with the
- 15 deposit numbers DSM 11881 and DSM 11882.
11. The method according to claims 9 and 10, characterised in that in the said bacteria, the genes of SEQ ID No. 1 and SEQ ID No. 2 named in the sequence protocol, or
- 20 genes which correspond to them in at least 35 % of the nucleotide positions, are genetically mutated, deleted or blocked.
12. A bacterial strain for TGC method for inducing targeted somatic transgenesis, characterised in that
- 25 within said bacterial strain, the foreign DNA integrated in the vector and prepared for subsequent transcription and expression, is under the control of regulatory elements which derive from the target organ to be infected or are directed for expression at this
- 30 target organ.
13. The bacterial strain according to claim 12, characterised in that it has been mutated into a
- 35 safety strain, which is by its growth no longer capable of adapting to environmental conditions as the result of a mutation in a gene (cspl mutant DSM 11883) and/ or being genetically altered through an auxotrophic mutation corresponding to SEQ 1 and/ or
- 40 through a mutation in the sense of endogenous attenuation (strains DSM 11881 and 11882) and/ or

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5 through additional equipping with exogenous suicide
gene(s).

10 14. The bacterial strain according to claim 13,
characterised in that it is mutated into a safety
strain, in which

15 a) the cspl gene according to sequence protocol ID No.
2 or a gene with at least 35 % of the nucleotides
in the same positions, is mutated or blocked or

b) the cpsl gene is deleted (strain DSM 11883),

20 c) the dapE gene according to sequence protocol SEQ ID
No. 1 or a gene with at least 35 % of the
nucleotides in the same positions, is deleted or
blocked or

25 d) the actA gene and/ or the plcB gene and/ or the hly
gene or other genes involved in virulence are
mutated, deleted or blocked.

30 15. The method according to claim 8, characterised in that
the said manipulated bacteria are Salmonella,
particularly Salmonella of the strain with deposit
number ATCC14028 or descendants of this strain which
have been genetically altered according to claim 14.

35 16. The method according to claim 15, characterised in
that the bacteria are auxotrophic through a mutation
in the aroA gene, deposited in the Gene bank, Sequence
M 10947.

40 17. The method according to claim 8, characterised in that
the said genetically manipulated bacteria are
apathogenic Listeria, apathogenic or optionally

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5 pathogenic Enterobacteriaceae or other pathogenic
bacteria.

18. The method for the transfection of animal cells by
foreign DNA, characterised in that the bacteria, as
10 carriers of the foreign DNA in the cytoplasm,

a) are not viable due to an auxotrophic mutation;

b) are not viable due to a foreign suicide gene;

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c) penetrate into the endosomes of the cells, but
cannot leave this compartment and are lysed in said
location;

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d) are taken up into phagolysosomes, lyse these
compartments and penetrate into the cytoplasm; and

e) are destroyed by antibiotic treatment

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and thereby release the foreign DNA.

19. A method for the production of a predetermined foreign
protein, characterised in that a selected cell, a
selected tissue or an organ is targeted for bacterial
30 infection and the creation of predetermined protein is
initiated in said location and after which the foreign
protein is isolated from the cell, tissue or organ and
is purified.

35 20. The method according to claim 20, characterised in
that the expression of foreign protein in the udder of
milk producing animals or in the eggs of poultry or in
the blood or other tissue of farm animals is induced
by infection with bacteria.

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- 5 21. A transgenic farm animal characterised in that all the cells of its organism or the cells of one or more of its tissues or organs are genetically altered using a method according to claim 1.
- 10 22. The method for the induction of somatic transgenesis according to claim 3, characterised in that the somatic transgenic tissue is reimplanted in a whole organism and the living whole organism in this way becomes somatically transgenic.

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